

Remarks

Claims 1-7 are pending herein.

In the Office Action, claims 1-5, 6 (as dependent on claims 4 or 5), and 7 (as dependent on claims 3, 4, or 5) are rejected under 35 U.S.C. §103(a) as being unpatentable over JP 2001-292048 to Takashi in view of JP 55-153416 to Joji.

In view of the amendments and remarks herein, Applicant respectfully requests reconsideration and withdrawal of the rejection set forth in the Office Action.

Takashi is cited for disclosing a rectangular piezoelectric element plate (11) having a flat surface at one surface, a package (12), a bump (41), and an electrode (31). Regarding claim 3, Takashi is cited for teaching joining the plate to the package via the bump while pressing (F) the plate against the package (see Figure 8). Regarding claims 4-6, Takashi is cited for disclosing the application of ultrasonic waves (see Figure 8), the use of an adsorbing nozzle (55), and the use of extraction electrodes (31). According to the Office Action, Takashi does not disclose the plate having a reduced thickness or a beveling circular arc on the other surface (as set forth in instant claims 1, 2 and 7).

Joji is cited for disclosing a piezoelectric plate having a flat surface and a bevel circular arc surface opposing the flat surface (Figs. 1b and 1c) for forming a small size and high performance device (see Abstract).

Applicant respectfully submits that claims 1-7 would not have been obvious over Takashi in view of Joji.

The present invention involves the following characteristics and corresponding advantages:

(1) applying a bevel working or convex working on a piezoelectric element plate so as to confine a vibration energy within the piezoelectric element plate, and

(2) making flat the surface of the piezoelectric element plate which is to be adsorbed by an adsorbing nozzle, so as to allow an axis of the adsorbing nozzle to be necessarily placed perpendicular to the piezoelectric element plate whenever the adsorbing nozzle adsorbs the piezoelectric element plate at any part thereof.

According to the instant specification:

In the piezoelectric device according to the present invention, it is possible to *confine vibration energy in the piezoelectric element plate*, with both longitudinal end parts of one surface of the piezoelectric element plate subjected to the bevel working or the convex working. Further, the other surface of the piezoelectric element plate is flattened, so as to *make the piezoelectric element plate surely placed on a plane perpendicular to the axial center of the adsorbing nozzle when an optional portion of the flat surface is adsorbed by the adsorbing nozzle, as a result of which the piezoelectric element plate is mounted on the package with a fixed posture relative to the adsorbing nozzle kept at all times.*

(page 6, line 27 – page 7, line 11).

To achieve both of the advantages highlighted in the above passage, Applicants' claimed invention uses a piezoelectric element plate wherein (i) one surface (the upper surface in claims 3 and 5) of the piezoelectric element plate is formed to be flat, and (ii) the other surface (the lower surface in claims 3 and 5) of the piezoelectric element plate is non-flat and is worked at both longitudinal end parts in a manner such that the thickness of the end parts gradually reduces toward both longitudinal end faces.

Joji does not disclose working a piezoelectric device such that one surface or top surface of the piezoelectric device, with which an adsorbing nozzle makes contact, is made flat, and the other surface or bottom surface of the piezoelectric device, with which no adsorbing nozzle makes contact, is bevel worked. Thus, the modification of Takashi to include the piezoelectric plate of Joji would not have resulted in the invention set forth in claims 1-7.

Therefore, for at least this reason, Applicant respectfully submits that claims 1-7 would not have been obvious over Takashi in view of Joji.

In view of the amendments and remarks herein, Applicant respectfully requests that the rejection set forth in the Office Action be withdrawn and that claims 1-7 be allowed.

If any fees are due in connection with the filing of this paper, such as fees under 37 C.F.R. §§1.16 or 1.17, please charge the fees to Deposit Account 02-4300; Order No. 032213M040.

Respectfully submitted,
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